

Appl. No. 10/025,838
Amdt. dated June 19, 2006
Reply to Office Action of May 24, 2006

PATENT

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1. (canceled)
2. (previously presented) A pointing device comprising:
 - a housing for supporting a user's hand;
 - a pointing sensor, mounted in said housing, for providing a pointing signal;
 - a contour on said housing for receiving a finger of said user, said contour having curvature in at least one directions;
 - a solid-state touch sensor in said contour for detecting movement of said finger along said contour;
 - wherein said contour comprises a trench shaped to match a curve traced by a fingertip of said finger during a bending of said finger about a knuckle of said finger.
3. (canceled)
4. (canceled)
5. (previously presented) A pointing device comprising:
 - a housing for supporting a user's hand;
 - a pointing sensor, mounted in said housing, for providing a pointing signal;
 - a contour on said housing for receiving a finger of said user, said contour having curvature in at least one directions;
 - a solid-state touch sensor in said contour for detecting movement of said finger along said contour;
 - wherein said touch sensor includes at least two electrodes, and further comprising:
 - a circuit for detecting a contact with said electrode, including
 - a first, capacitive element;

Appl. No. 10/025,838
Amdt. dated June 19, 2006
Reply to Office Action of May 24, 2006

PATENT

a second element connected to said capacitive element;
a comparison circuit, having an input node connected to said capacitive and second elements, for comparing a voltage at said input node to a threshold voltage;
a clamp-high circuit, connected to said node, for clamping said node high in response to a clamp-high control signal;
a clamp-low circuit, connected to said input node, for clamping said node low in response to a clamp-low control signal; and
a controller, connected to an output of said comparison circuit, to said clamp-high circuit and to said clamp low circuit, for providing said clamp-high and clamp-low control signals and generating an output signal in response to measuring an amount of time between transitions of said output of said comparison circuit.

6. (original) The device of claim 5 wherein the second element is a current source.
7. (canceled)
8. (canceled)
9. (previously presented) A pointing device comprising:
a housing for supporting a user's hand;
a pointing sensor, mounted in said housing, for providing a pointing signal;
a contour on said housing for receiving a finger of said user, said contour having curvature in at least one directions;
a solid-state touch sensor in said contour for detecting movement of said finger along said contour;
a sensory feedback element for providing feedback to a user corresponding to an amount of movement of said finger in said contour;
wherein said sensory feedback element comprises a plurality of tactile formations on a surface of said contour.
10. (canceled)

Appl. No. 10/025,838
Amdt. dated June 19, 2006
Reply to Office Action of May 24, 2006

PATENT

11. (canceled)
12. (canceled)
13. (original) A pointing device comprising:
 - a housing;
 - a pointing sensor, mounted in said housing, for providing a pointing signal;
 - at least one electrode mounted on said housing;
 - a circuit for detecting a contact with said electrode, including
 - a first, capacitive element;
 - a second element connected to said first, capacitive element;
 - a comparison circuit, having an input node connected to said first and second elements, for comparing a voltage at said input node to a threshold voltage;
 - a clamp-high circuit, connected to said node, for clamping said node high in response to a clamp-high control signal;
 - a clamp-low circuit, connected to said input node, for clamping said node low in response to a clamp-low control signal;
 - a controller, connected to an output of said comparison circuit, to said clamp-high circuit and to said clamp low circuit, for providing said clamp-high and clamp-low control signals and generating an output signal in response to measuring an amount of time between transitions of said output of said comparison circuit.
14. (original) The device of claim 13 wherein the second element is a current source.
15. (canceled)
16. (original) A method of capacitively detecting movement of a finger across a plurality of electrodes on a pointing device, comprising:
 - detecting, for each electrode, a first amount of time for a capacitance connected to said electrode to charge up from a low voltage to a first threshold;
 - detecting, for each electrode, a second amount of time for said capacitance to discharge from a high voltage to a second threshold; and

Appl. No. 10/025,838
Amdt. dated June 19, 2006
Reply to Office Action of May 24, 2006

PATENT

comparing said amounts of time to a calibration value corresponding to the absence of a finger on said electrodes.

17. (original) The method of claim 16 further comprising:
charging and discharging said capacitance faster than an AC frequency of an AC power supply;

detecting said first and second amounts of time at least twice during a period of said AC frequency to produce at least two measurement sets;

averaging said two measurement sets.

18. (canceled)

19. (canceled)

20. (canceled)

21. (canceled)

22. (canceled)

23. (canceled)

24. (canceled)

25. (canceled)

26. (canceled)

27. (canceled)

28. (canceled)

29. (original) The pointing device of claim 5 wherein said second element is a resistive element.

30. (canceled)

31. (canceled)